

## SCADA Interface to Telemetric Equipment

Utilities often desire to manage Telemetric units using their existing SCADA system and consoles as the primary interface. SCADA-Xchange is a powerful means of integrating Telemetric's control and data acquisition functionality into these systems. It allows a SCADA system to poll any Telemetric device as if it were connected directly to the SCADA system.

To a SCADA system, SCADA-Xchange appears as a group of Remote Terminal Units (RTUs) or Intelligent Electronic Devices (IEDs) connected to a one port on the system. SCADA polls one location to receive data from the multiple devices. SCADA-Xchange translates data from Telemetric field devices into DNP3 responses, and then returns the data to the utility's SCADA system over a secure TCP/IP connection. When a change is detected, the event is reported like any other alarm on SCADA.

For outgoing communication, SCADA-Xchange interprets requests and commands from the utility's SCADA system and then translates and sends these to field units using the FlexNet or cellular networks. These commands are carried out like any other message sent to an RTU.

## Features

Data passes through SCADA-Xchange in three situations:

1. Unsolicited or Report-by-exception events occur
  2. Time scheduled reports are sent by the Telemetric device
  3. Direct queries or commands to devices initiated by users via SCADA or the Telemetric hosted applications
- Functions as a DNP3 slave responding to the SCADA system.
  - Provides a reliable, secure and cost effective communication option to extend SCADA beyond the substation to distribution equipment.
  - Uses proven DNP source code.
  - DNP 3.0 protocol over TCP/IP or serial is standard. Other protocols can be supported with protocol converters.

## Benefits

- No SCADA protocol development or special interfaces are required.
- Cost effectively extends SCADA to any distribution equipment connected to Telemetric devices.
- Operates without special master software.
- Installation, training and support are available from Telemetric.

## DNP - TCP/IP or Serial

The standard method for exchanging data between SCADA-Xchange and the utility SCADA system is a TCP/IP connection using DNP 3.0 protocol. The connection is any IP routable network between the Telemetric NOC and the SCADA system, and can utilize a frame relay or a Virtual Private Network (VPN). Additional security features such as encryption are available.

Some SCADA systems only support serial interfaces. In these cases, a protocol converter can be used to convert serial DNP data to TCP/IP DNP data.

## Implementation

The SCADA system connects to the Xchange server via a TCP/IP connection. Typically this involves the following:

- An outbound only connection is added to the utility firewall addressed to a Telemetric IP address
- New points are added to the SCADA system database
- SCADA is configured to poll the connection
- For additional security, a SonicWall SSL appliance can be placed between the firewall and the SCADA system to encrypt all TCP/IP packets

## Security Considerations

The Telemetric NOC connects to the cellular networks through a secure, dedicated frame relay or VPN connections. Data transmissions to and from the field units can only be initiated and received by the NOC. The units cannot be addressed from other IP addresses, cell phones or phone lines.

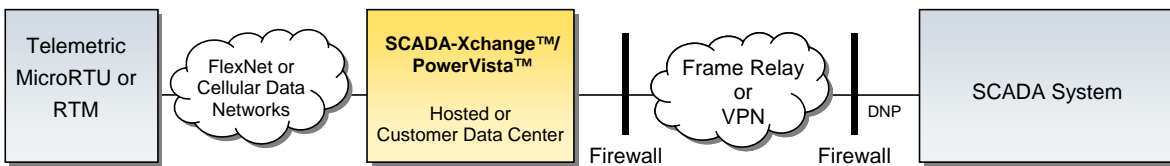
- The Telemetric NOC is supported by a redundant OC48/OC12 connection to the Internet backbone, and the facility maintains a Cisco Seal of Approval, a fire suppression system and a backup generator.
- All Telemetric PowerVista™ servers and all SCADA-Xchange transactions are protected by hardware and software firewalls. Servers are maintained with the latest security updates and regularly scanned for any security vulnerabilities.
- The PowerVista servers support Verisign 128 Bit SSL encryption. Verisign is the industry standard for securing on-line transactions. Each web session is secured with a new 128-bit encryption key.
- Telemetric has researched and recommends two options for connecting utility SCADA systems to SCADA-Xchange. These options are a frame relay or VPN connection.

## Alternate Protocols

Protocol converters are available to support SCADA protocols other than DNP. Since most alternate protocols are based on an RS-232 physical link, the protocol converter will normally be located at the utility's SCADA facility near the RS-232 ports used for RTU communications.

In a typical configuration, SCADA-Xchange will use DNP - TCP/IP to communicate with an RCOM protocol converter from Applied Systems Engineering (ASE) running on a Windows compatible computer. RCOM translates from DNP to virtually every RTU/IED protocol. Using the standard 8-channel interface, SCADA-Xchange can communicate with multiple systems that may use the same or different protocols. Contact Telemetric for additional information on protocol conversion.

### Standard DNP TCP/IP (WAN Interface) – Example Configuration



### Alternative Protocol Converter – Example Configuration

